

Figure 1

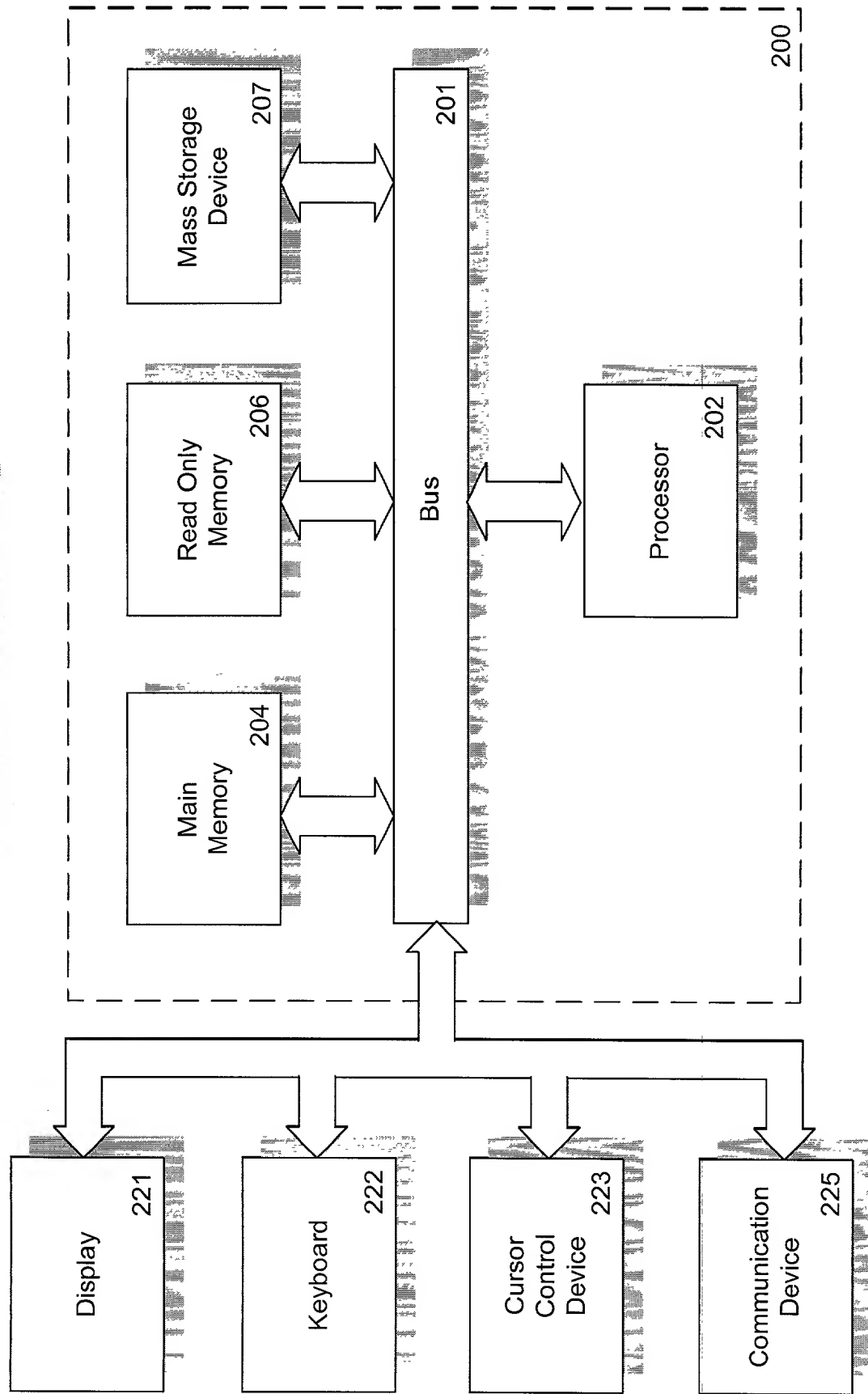


Figure 2

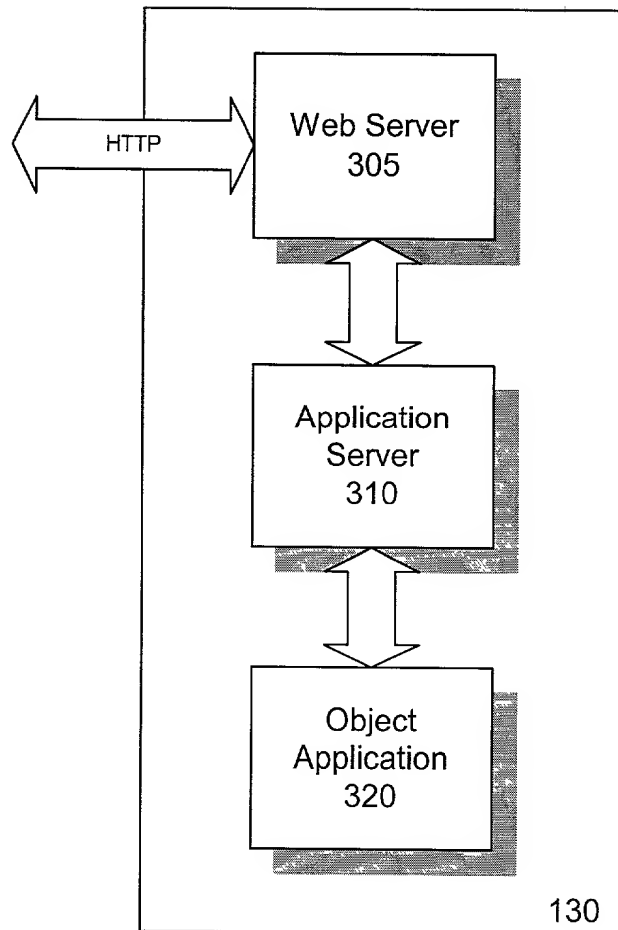


Figure 3

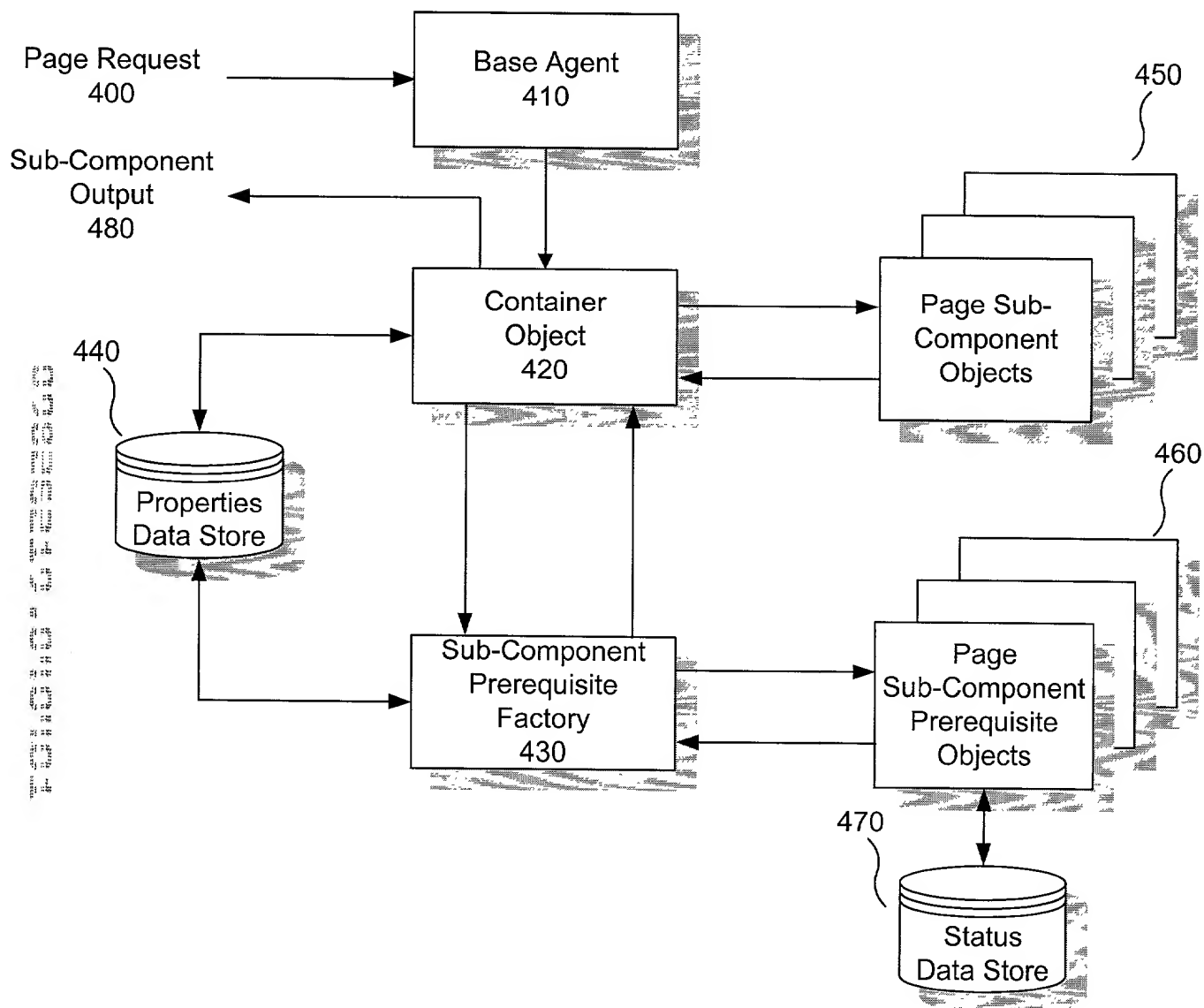


Figure 4

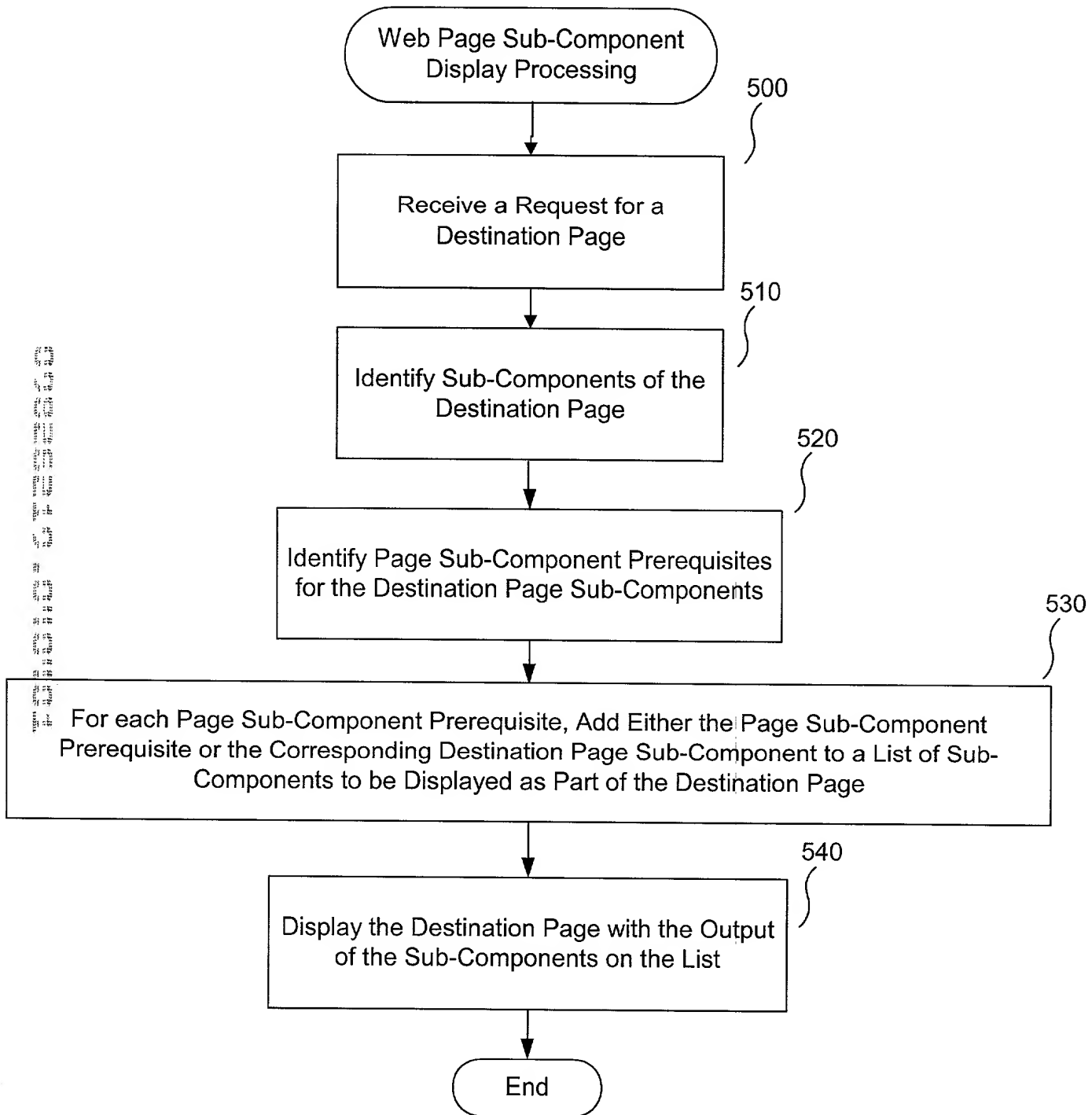


Figure 5A

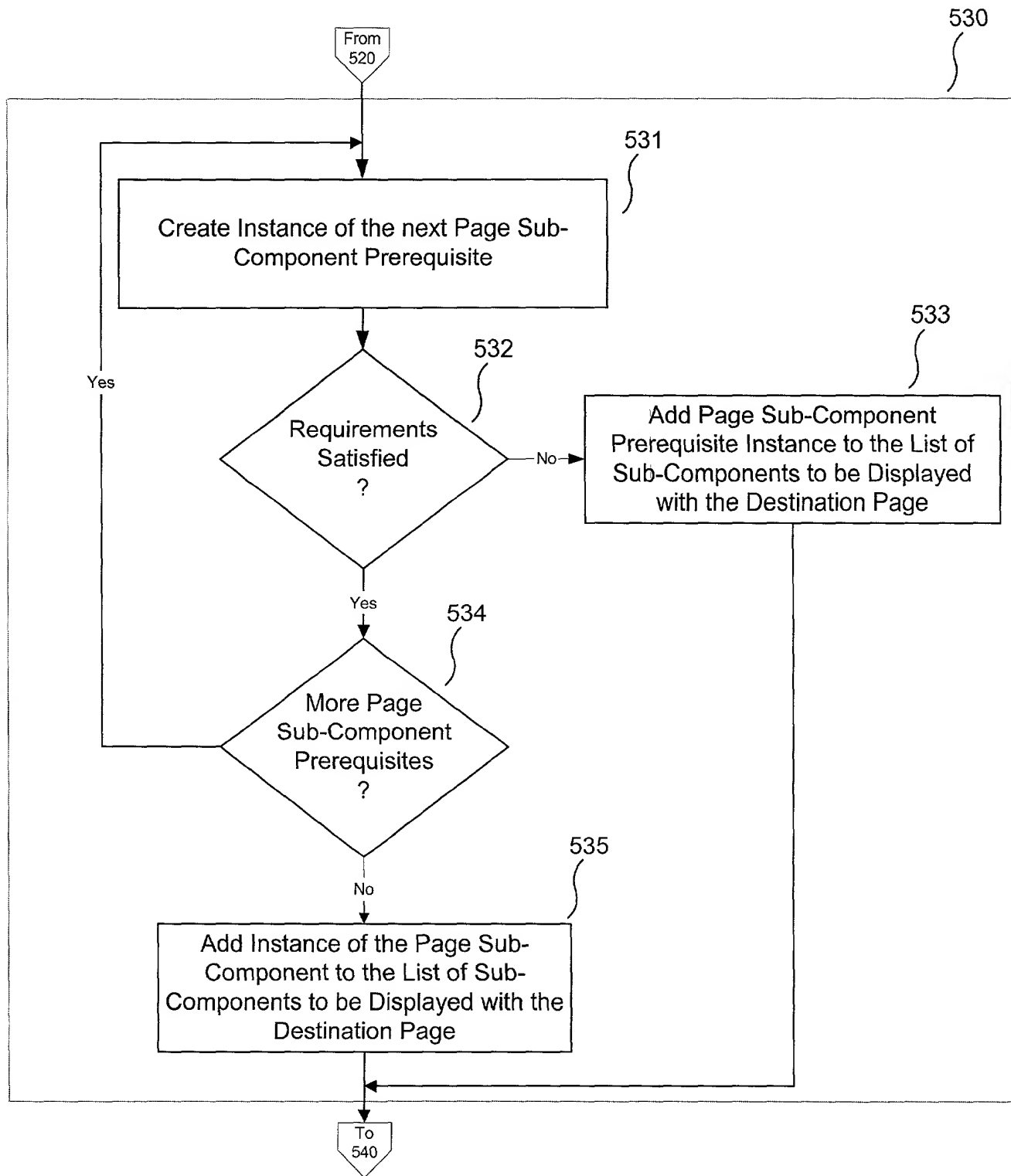


Figure 5B

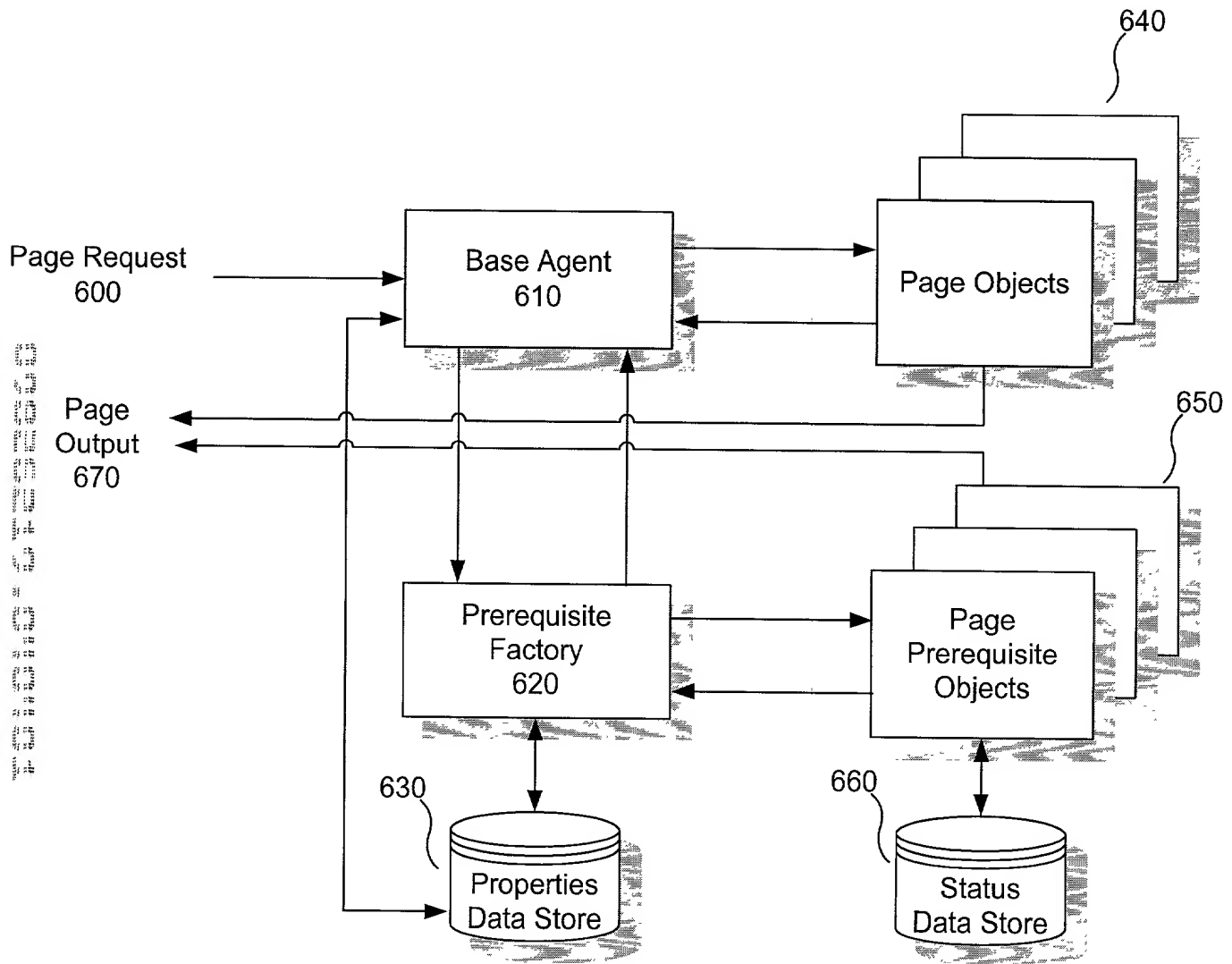


Figure 6

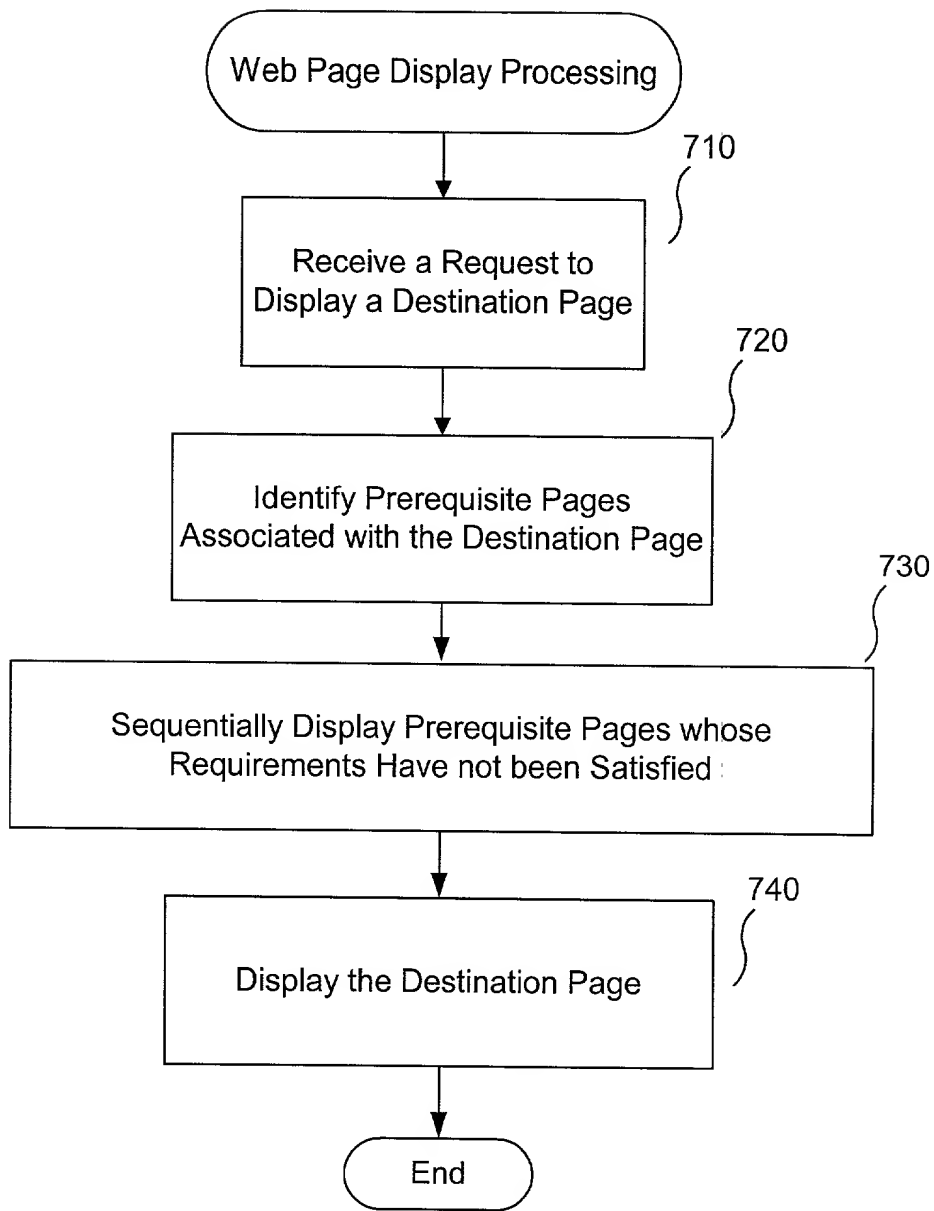


Figure 7A

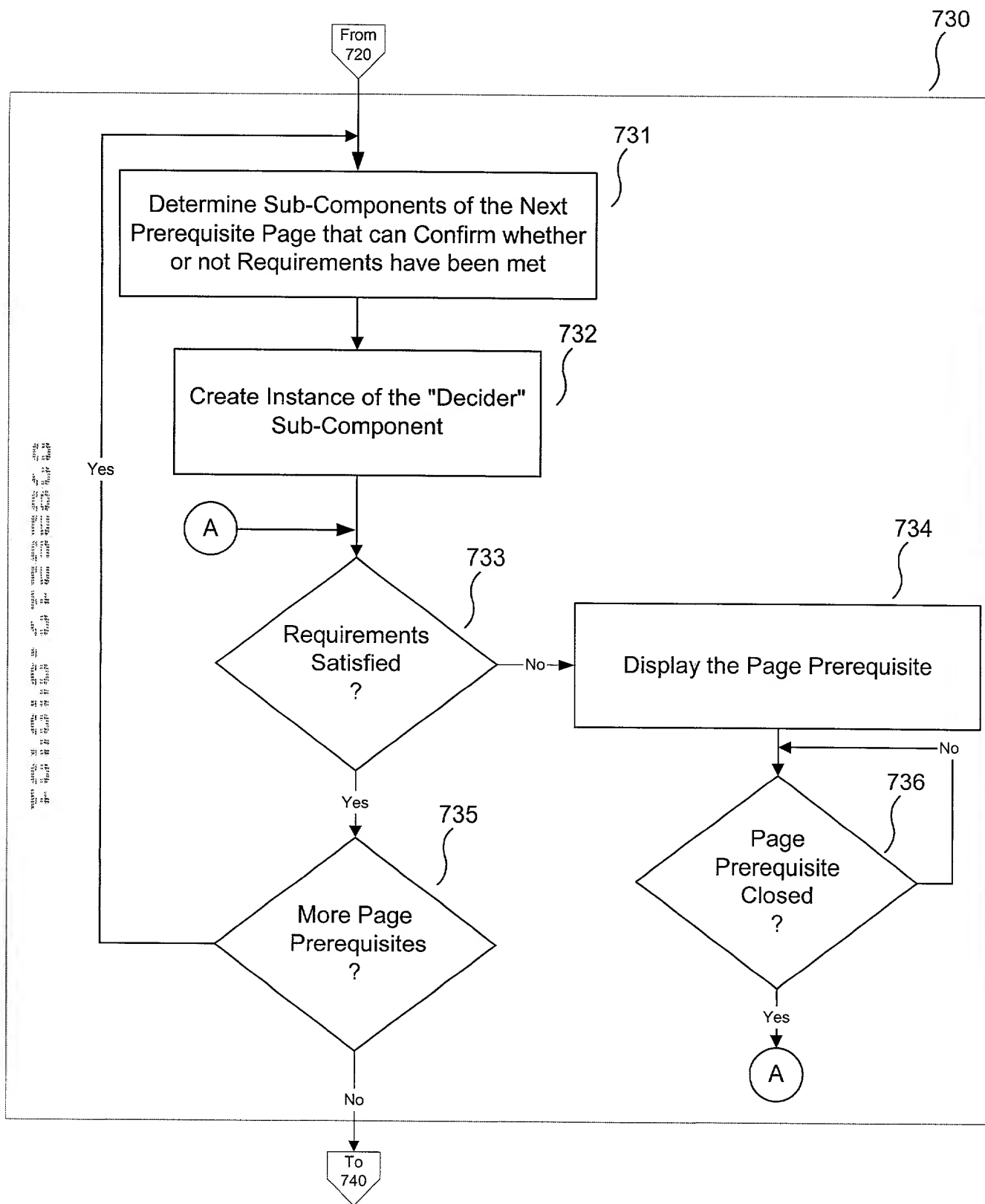


Figure 7B

$\langle \text{Attribute} \rangle = \langle \text{Value} \rangle$ 810
prompt1 = please enter your name 820

Figure 8 (Prior Art)

$\langle \text{Object} \rangle . \langle \text{Attribute} \rangle = \langle \text{Value} \rangle$ 910
Obj1.attr1 = val11 920
Obj1.attr2 = val12 930
Obj2.attr1 = val21 940
Obj2.attr3 = val23 950
Trading.prompt1 = please enter your name 960

Figure 9

`<Object>.extends = <anotherObject>` 1010

`Obj1.attr1 = val11` 1020
`Obj1.attr2 = val12` 1030

`Obj2.extends=Obj1` 1040
`Obj2.attr2 = val22` 1050
`Obj2.attr3 = val23` 1060

Figure 10

`<Context>.<Object>.<Attribute> = <Value>` 1110

`Obj1.attr1 = val11` 1120
`Obj1.attr2 = val12` 1130
`Page1.Obj1.attr2 = val112` 1140

Figure 11

`<Context>.extends = <anotherContext>` 1210

`Obj1.attr1 = val11` 1220
`Obj1.attr2 = val12` 1230
`Page1.Obj1.attr2 = val112` 1240

`Page2.extends = Page1` 1250
`Page2.Obj1.attr2 = val212` 1260

Figure 12

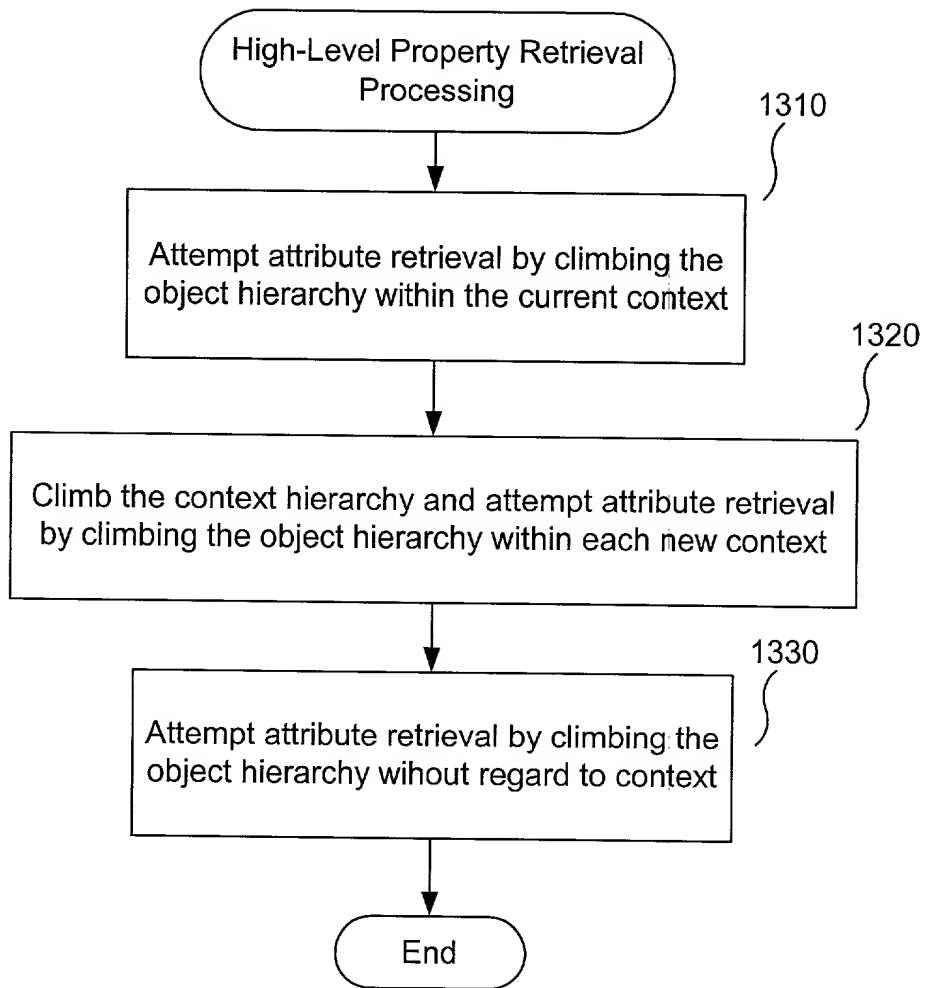


Figure 13

Page2.extends=Page1
Page3.extends=Page2

Obj2.extends=Obj1
Obj3.extends=Obj2

Figure 14A

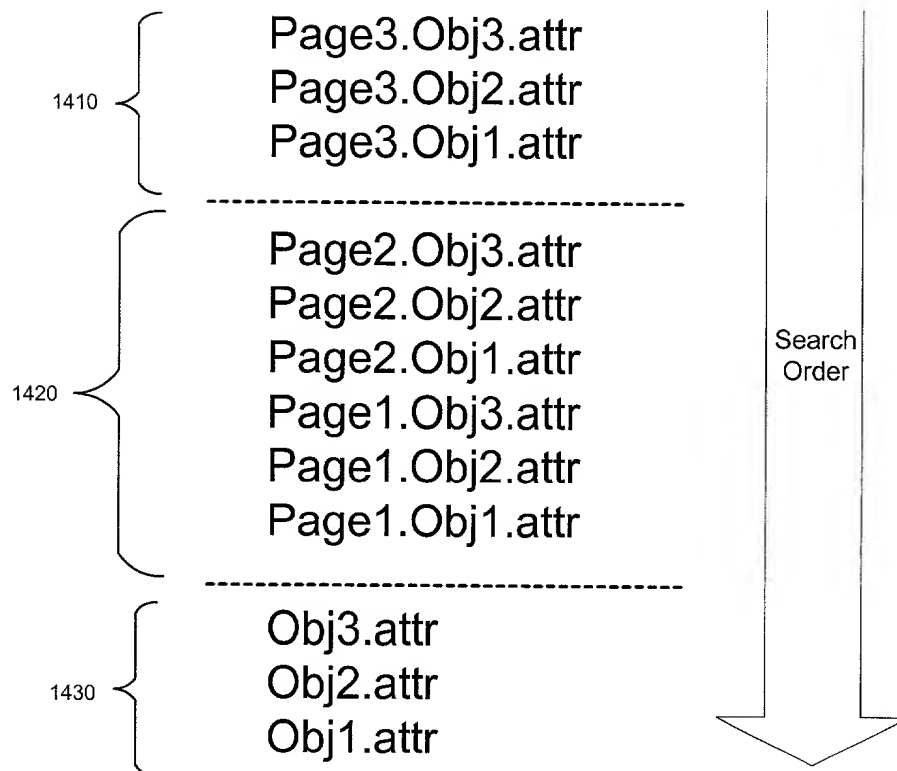


Figure 14B

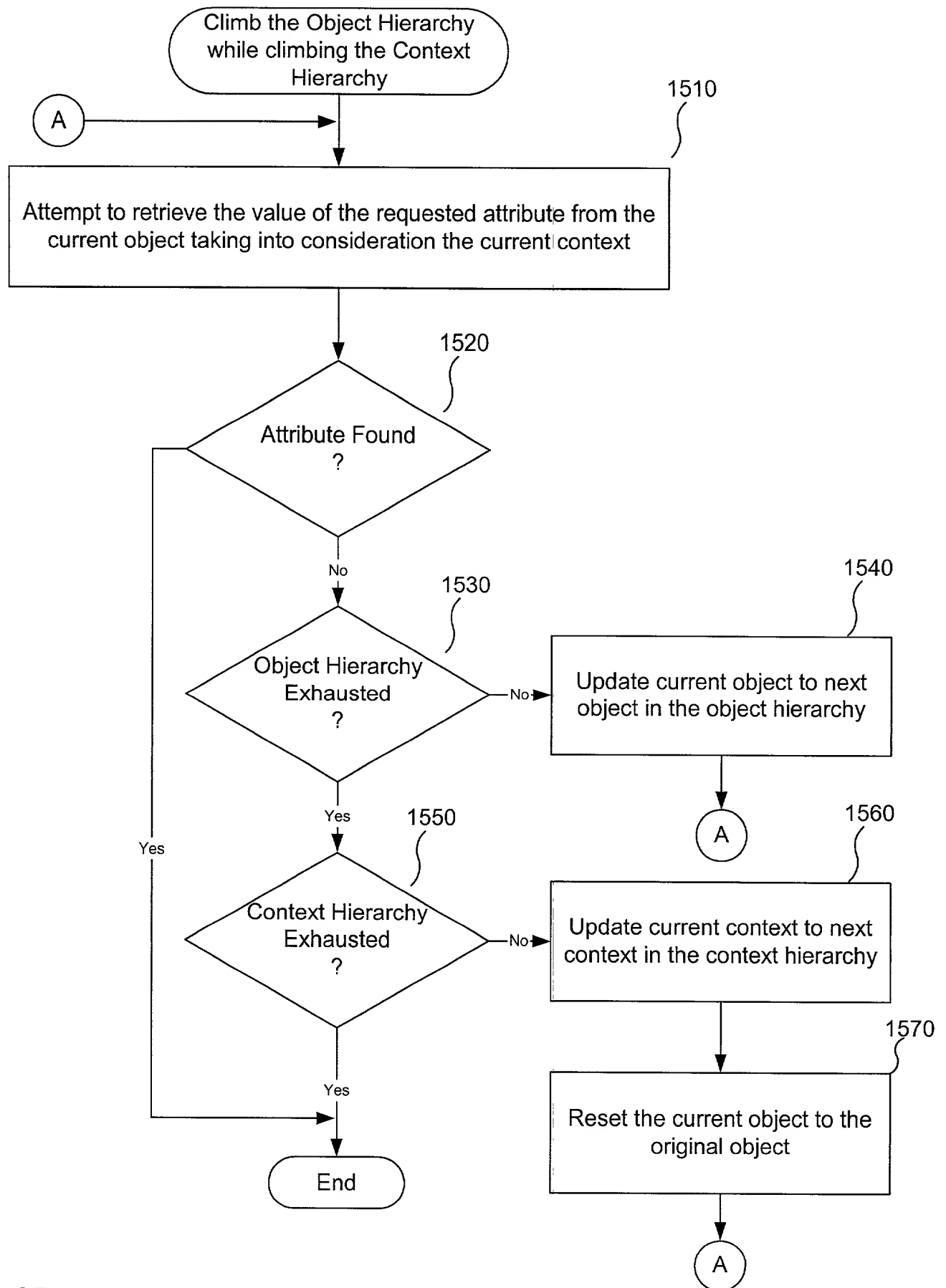


Figure 15

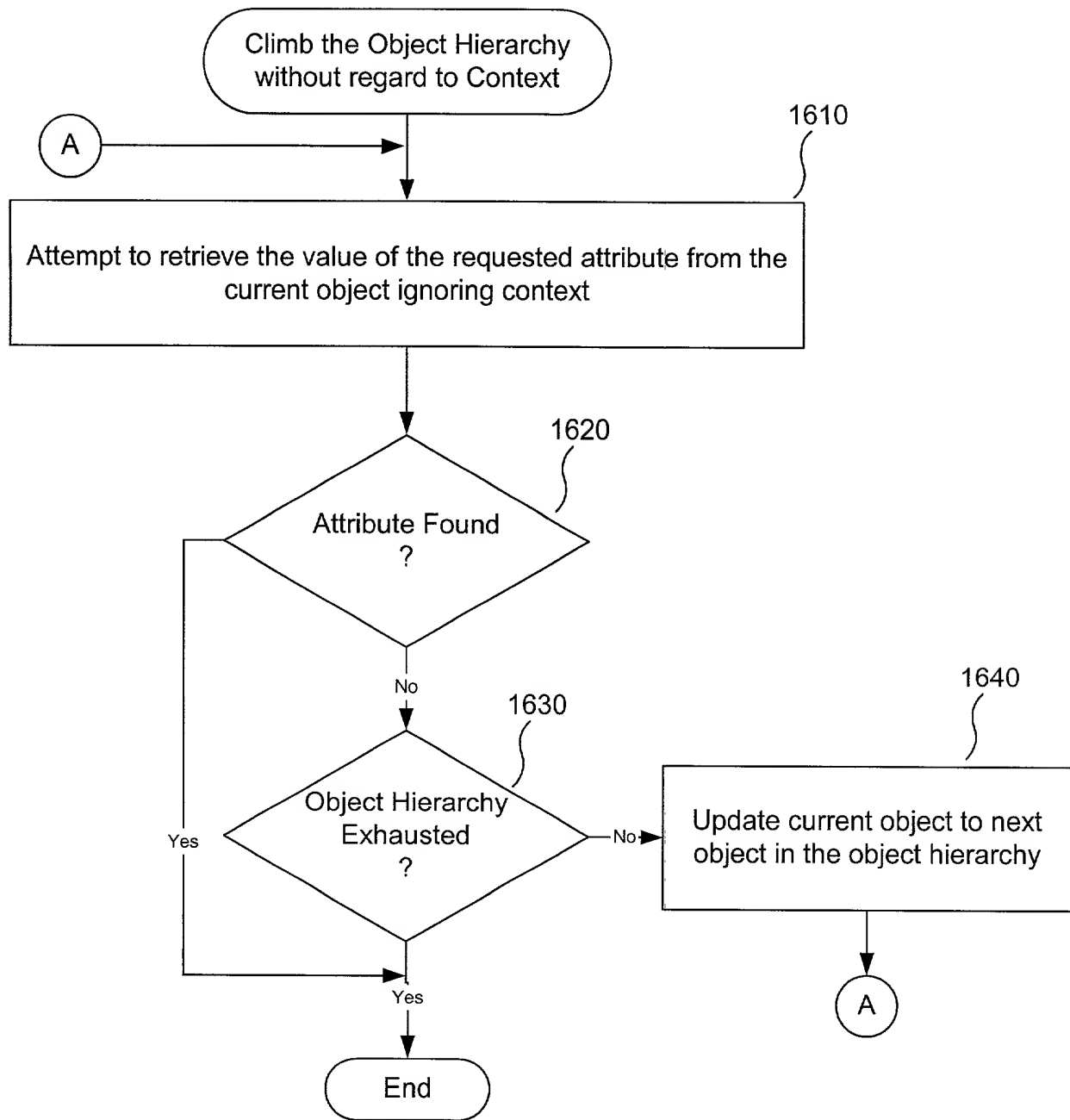


Figure 16

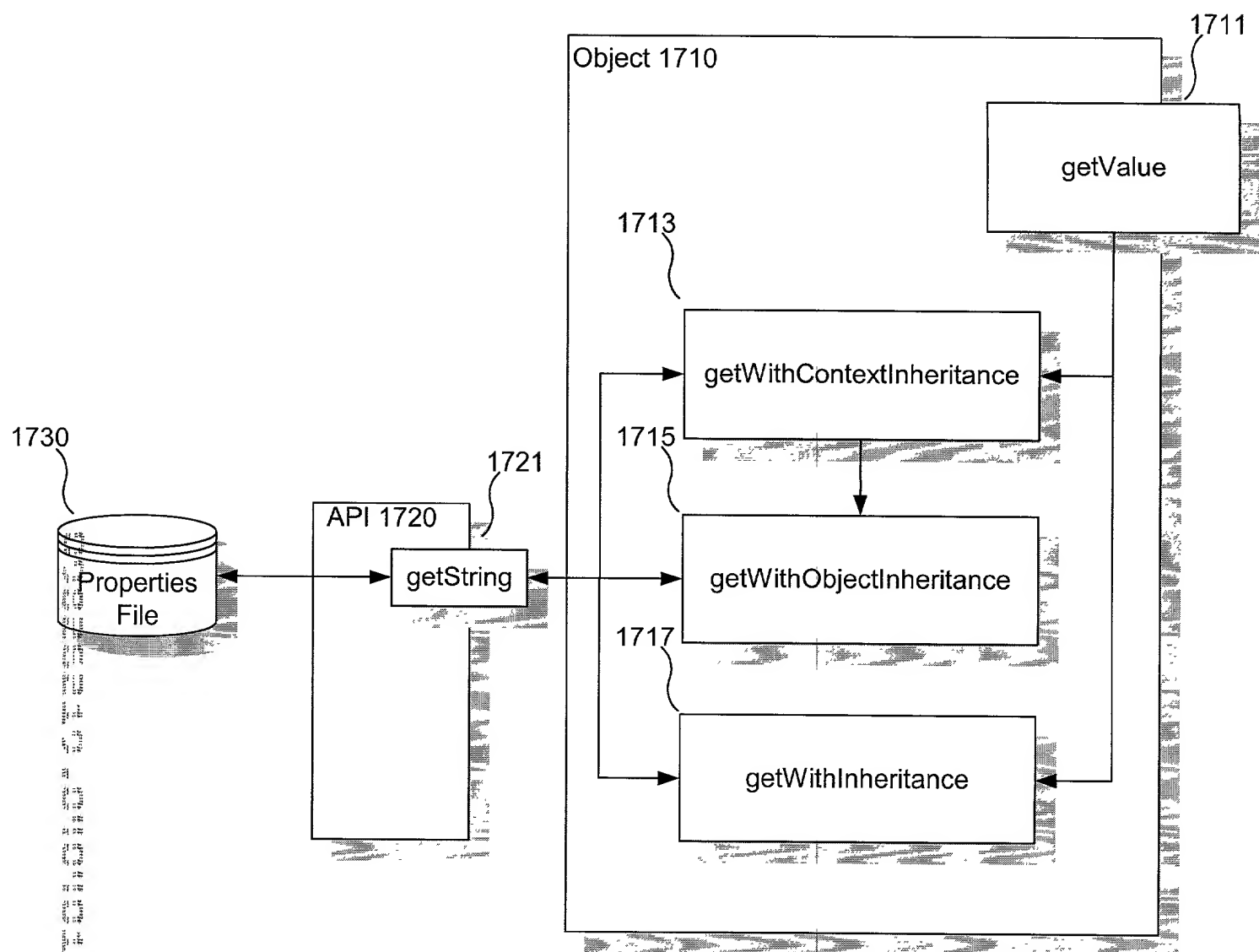


Figure 17


```

1.  String getValue( String attrib ) {
2.
3.      // get the container name of this object
4.      String context = getContextName();
5.
6.      // get the name of the class of this executing object
7.      String object = getClass().getName();
8.
9.      // check to see if within this context a value is defined for the
10.     // specified attribute for objects of the currently executing object's
11.     // type, or for any of its parent objects
12.
13.     String result = getWithContextInheritance( context, object, attrib );
14.
15.     if (result == null) { // if it's null it didn't find it.
16.
17.         // now try to find the value of the attribute of the object
18.         // by ignoring the context
19.
20.         // this will look for the attribute in all objects that are extended by
21.         // the current object
22.
23.         result = getWithInheritance( object, attrib );
24.
25.     } // end if
26.
27.     return result;
28.
29. } // end getValue

```

Figure 18

```

1.  String getWithContextInheritance(
2.      String context, String object, String attrib) {
3.
4.      // check if the attrib is found in the current context by climbing up
5.      // the object hierarchy if necessary
6.      String result = getWithObjInheritance( context, object, attrib );
7.
8.      if (result == null) { //didn't find it in the current context
9.          // check if this context extends another context
10.         context = resourceBundle.getString( context + ".extends" );
11.
12.         //context now contains the name of the parent context, if any
13.         if (context != null) // found a parent context
14.             // this is a recursive call that looks for the attribute
15.             // and climbs up the context hierarchy
16.             result = getWithContextInheritance( context, object, attrib );
17.
18.         } //end if
19.
20.         return result;
21.
22.     } // end getWithContextInheritance

```

Figure 19

```

1.  String getWithObjInheritance( String context, String object, String attrib ) {
2.      // concatenate context, ".", the object, ".", and the attrib
3.      String lookFor = context + "." + object + "." + attrib;
4.
5.      // check if the combined attribute is found in the resource bundle
6.      String result = ResourceBundle.getString( lookFor );
7.
8.      if (result == null) { // didn't find it in the current object
9.          // check if object extends another object, meaning
10.         // it has a parent.
11.         object = ResourceBundle.getString( object + ".extends" );
12.
13.         //object now contains the name of the parent, if any
14.         if (object != null) // found a parent object
15.             // this is a recursive call that climbs up the
16.             // object's hierarchy while keeping the context unchanged.
17.             result = getWithObjInheritance( context, object, attrib );
18.
19.         } // end if
20.
21.         return result;
22.
23.     } // end getWithObjInheritance

```

Figure 20

```

1.  String getWithInheritance( String object, String attrib ) {
2.      // concatenate the object, ".", and the attrib
3.      String lookFor = object + "." + attrib;
4.
5.      // check if the combined attribute is found in the resource bundle
6.      String result = ResourceBundle.getString( lookFor );
7.      if (result == null) { //didn't find it in the current object
8.          // check if object extends another object, meaning
9.          // it has a parent.
10.         object = ResourceBundle.getString( object + ".extends" );
11.
12.         // object now contains the name of the parent, if any
13.         if (object != null) // found a parent object
14.             // this is a recursive call. Look for the attribute
15.             // in the parent or its parents
16.             result = getWithInheritance( object, attrib );
17.
18.         } // end if
19.
20.         return result;
21.
22.     } // end getWithInheritance

```

Figure 21